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**From:** Hines, Ronald [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=464F333922CC4AA68DB2A1677122AB58-HINES, RONALD]  
**Sent:** 11/2/2018 1:32:01 PM  
**To:** Angrish, Michelle [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=98d337f83ea24740b8ae21da697ac1e1-Angrish, Mi]  
**Subject:** Re: Identification of Shared Toxicity Phenotypes in Zebrafish Exposed to Structurally Similar PFAS

OK. Thanks.

Ron Hines, PhD, ATS  
Associate Director for Health  
US/EPA/ORD NHEERL

Sent from my iPhone

> On Nov 2, 2018, at 08:10, Angrish, Michelle <Angrish.Michelle@epa.gov> wrote:  
>  
> Yes she is. This group includes everyone in NCEA involved in any aspect of PFAS.  
>  
> -----Original Message-----  
> From: Hines, Ronald  
> Sent: Friday, November 2, 2018 6:51 AM  
> To: Angrish, Michelle <Angrish.Michelle@epa.gov>  
> Subject: Re: Identification of Shared Toxicity Phenotypes in Zebrafish Exposed to Structurally Similar PFAS  
>  
> Is Samantha Jones included in the NCEA PFAS group? If not, please invite her.  
>  
> Ron Hines, PhD, ATS  
> Associate Director for Health  
> US/EPA/ORD NHEERL  
>  
> Sent from my iPhone  
>  
>> On Nov 1, 2018, at 14:47, Angrish, Michelle <Angrish.Michelle@epa.gov> wrote:  
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>>  
>> -----Original Appointment-----  
>> From: Angrish, Michelle  
>> Sent: Thursday, November 01, 2018 2:36 PM  
>> To: Angrish, Michelle; NCEA PFAS; Dishaw, Laura; Tal, Tamara  
>> Subject: Identification of Shared Toxicity Phenotypes in Zebrafish  
>> Exposed to Structurally Similar PFAS  
>> When: Thursday, November 15, 2018 12:00 PM-1:00 PM (UTC-05:00) Eastern Time (US & Canada).  
>> Where: webinar: <https://epawebconferencing.acms.com/tal/> phone:  
>> 2029910477 code 7413 938  
>>  
>> Please join us for a webinar where Tamara Tal will present data on: ammonium 4,8-dioxa-3H-perfluorononanoate (ADONA), GenX (HFPO-DA), Nafion byproduct 1 (Nafion BP1), perfluorobutanesulfonic acid (PFBS), perfluoroheptanesulfonic acid (PFHpS), perfluorohexanesulfonic acid (PFHxS), perfluorohexanoic acid (PFHxA), perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), and Perfluoropentanesulphonic acid (PFPeS).  
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>> Abstract: Per- and polyfluoroalkyl substances (PFAS) are a structurally diverse class of industrial chemicals with widespread environmental occurrence. Exposure to long-chain PFAS is associated with developmental toxicity (DevTox) and developmental neurotoxicity (DNT), resulting in their replacement with short-chain and polyfluoroether compounds. For hazard identification of replacement PFAS, DevTox and DNT were assessed in 6 day post fertilization (dpf) zebrafish exposed to 0.044-80.0 µM ammonium 4,8-dioxa-3H-perfluorononanoate (ADONA), HFPO-DA (GenX), Nafion byproduct-1 (PFESA1), perfluorohexanoic acid (PFHxA), perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorohexanesulfonic acid (PFHxS), or 0.4% DMSO with daily renewal on 0-5 dpf. PFOS or PFHxS exposure resulted in DevTox characterized by failed swim bladder inflation and abnormal ventroflexion of the tail. Exposure to non-teratogenic concentrations of PFOS, PFHxS, or PFHxA triggered locomotor hyperactivity. To test whether sulfonic acid PFAS elicit identical morphological and behavioral phenotypes, perfluorobutanesulfonic acid (PFBS; 4-carbon), PFHxS (6-carbon), perfluoroheptanesulfonic acid (PFHpS; 7-carbon), and PFOS (8-carbon) were assessed. Chemical potency for DevTox and hyperactivity in the DNT assay were correlated with increasing carbon chain length (PFOS>PFHpS>PFHxS; PFBS was negative). Together, exposure to PFOS, PFHxS, or PFHpS evoked DevTox while exposure to non-teratogenic concentrations of PFOS, PFHpS, PFHxS, or PFHxA provoked hyperactivity. Quantitation of parent compound in 6 dpf tissue suggests that GenX was unstable

in DMSO, resulting in equivocal toxicity data. Collectively, this work identified relationships between chemical structures and in vivo phenotypes that may arise from putative shared mechanisms of PFAS toxicity. This abstract does not necessarily reflect EPA policy.

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>> Please join us for visuals using adobe connect:

>> <https://epawebconferencing.acms.com/tal/>

>> For sound please dial: 2029910477 Code 7413 938 <meeting.ics>